

REMARKS/ARGUMENTS

Claims 12 and 14-18 have been canceled. Claims 9-11 and 13 are active in the case. Reconsideration is respectfully requested.

The present invention relates to (meth)acrylic acid copolymers for use in water treatment, scale inhibition in petroleum production and corrosion inhibition.

Claim Amendments

As a result of the amendments made to the claims, Claims 9-11 and 13 remain active in the case. Claim 9 has been amended so that it recites in step (2) that polymer (I), that has been produced in step (1), is amidated with at least one aminoalkanesulfonic acid to form a sulfonated polymer. It is readily apparent that the reaction between carboxylic acid groups on the acrylic polymer and the amino groups of the aminoalkanesulfonic acid reactant results in a sulfonated polymer. Further, support for the molar ratio range of monomer in polymer (I) to the aminoalkanesulfonic acid reactant, as now claimed of 15:1 to 4:1 is found on page 5, lines 9 to 14 of the specification. The amendments made to Claim 9 do not introduce new matter into the case. Entry of the amendments is respectfully requested.

Claim Rejection, 35 USC 103

Claims 9-13 stand rejected based on 35 USC 103(a) as anticipated by Fong et al, U. S. Patent 4,604,431 in view of Muenster et al, U.S. Patent 4,301,266. This ground of rejection is respectfully traversed.

Fong et al discloses a method of modifying (meth)acrylic acid homopolymers with aminosulfonic acids. As disclosed in the summary of the invention, an aqueous solution of (meth)acrylic acid is reacted with aminoalkylsulfonic acid, aminoarylsulfonic acid or aminoarylalkylsulfonic acid for a time sufficient to convert at least 5 mole % of the

carboxylic acid groups in the base polymer to amidated form. The examples of the Fong et al patent describe the reaction of polyacrylic acid with taurine, wherein in Example 1, the molar ratio of carboxylic acid bearing monomers to taurine is 3.4, while in Examples 2 and 4 the same mole ratio is established. In the case of Example 3, the molar ratio of monomers in the static polyacrylic acid to taurine is 1.7. By contrast, in the present invention, the poly(meth)acrylic acid (polymer I) reacts with the at least one aminoalkanesulfonic acid to form the sulfonated polymer. As specified in the present claims, the molar ratio of monomers in polymer I to aminoalkane sulfonic acid ranges from 15:1 to 4:1, whereas Fong et al, in the examples discloses ratios of 1.7 or 3.4. Thus, an important difference between the teachings of the reference and the present claims is that Fong et al teaches a low ratio of monomers of the base polymer and taurine, whereas, in the present claims, the molar ratio of polymer I to aminoalkanesulfonic acid ranges from 15:1 to 4:1. Thus, there is no overlap between the range recited in the present claims and the molar ratio values of the examples of Fong et al.

Applicants again reiterate that another distinction between the invention and the disclosure of the patent is that present polymer I is prepared by the free-radical initiated polymerization of (meth)acrylic acid whereas in the patent, as the examples of the patent show, the polymerization of (meth)acrylic acid is thermally initiated. On the other hand, the examples in the present specification show the advantages of the invention which are only achieved at the higher ratio values of monomers in polymer I and aminoalkanesulfonic acid of up to 15:1, but at a minimum of 4:1. This range is not shown or suggest by the lower mole ratios described in the examples of the patent.

Another important distinction of the amidated polymer product of the present claims over that of the Fong et al patent is that the sulfoalkylamide structural units of the (meth)acrylic acid copolymer of the invention are randomly distributed in the present copolymer. Fong et al does not show or suggest such a random distribution which may be

consistent with the different manner in which (meth)acrylic acid monomer is polymerized to form the base polymer employed therein.

As to the Muenster et al patent, described therein is the preparation of polymers of acrylic acid and methacrylic acid in an aqueous isopropanol solution, and the polymers obtained, *per se*, are used as dispersing agents for inorganic pigments. The copolymer that is obtained is not further process in an amidating reaction using aminoalkanesulfonic acids. Therefore, Muenster et al has to be, and is, totally silent as to the molar ratio of monomers of a (meth)acrylic acid polymer and an aminoalkanesulfonic acid. Thus, the present invention is not obvious in view of the cited prior art and withdrawal of the rejection is respectfully requested.

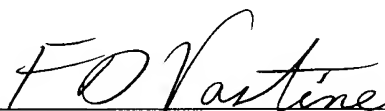
It is believed that the application is in proper condition for consideration on its merits.

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